

Finding: CPExpert believes that the buffer size allocated for the system log journal is too small.

Impact: This finding should normally have a LOW IMPACT, MEDIUM IMPACT, or HIGH IMPACT on the performance of the CICS region. The level of impact depend on the number of times the "buffer full" condition was experienced by the system log journal.

Logic flow: This is a basic finding, based upon an analysis of the CICS statistics.

Discussion: CICS uses the system log journal to automatically log changes to recoverable resources. During emergency restart after an uncontrolled or immediate CICS termination, ICS uses the system log as the source of information for restoring resources. For systems prior to CICS Version 3.2.1, a single buffer is acquired for the system log journal (CICS Version 3.2.1 acquires two buffers for each journal). The size of each journal buffer is specified in the BUFSIZE operand of the DFHJCT macro.

The BUFSIZE operand determines the maximum size of a physical journal block. A physical journal normally contains more than one logical journal record, however. Journal records are placed sequentially in the journal buffer until a physical journal block is written. A physical journal block is written under the following conditions:

- The SYSWAIT=STARTIO (the default specification) was entered in the DFHJCT macro and a synchronizing request was made to the journal from CICS management modules.
- The logical records placed into the buffer used the amount of buffer space specified in the BUFSUV operand in the DFHJCT macro (the default value of the BUFSUV operand is the BUFSIZE value). When the logical records placed into the buffer used the amount of buffer space specified in the BUFSUV operand, a physical block output is started.

Prior to CICS Version 3.2.1, the BUFSUV operand can be used to overlap physical output with placing of additional logical records into the buffer. For CICS Version 3.2.1, two buffers are acquired and overlap is managed by switching buffers.

Prior to CICS Version 3.2.1, a physical output is initiated when the buffer space used by logical records reached the BUFSUV value. CICS continues to add logical records to the buffer until the physical output is complete (or until the buffer space is used up). After the physical output is completed, the logical records added to the buffer are "shifted up" to the beginning of the buffer.

If the buffer is full, tasks must wait until the physical output completes. This wait time delays tasks and lengthens response. These response delays definitely should be prevented, particularly for the system log journal.

However, there is potentially a more serious effect for the overall CICS region when tasks wait for the system log journal. When tasks wait for the system log, they will become dispatchable whenever the physical output completes and their records are placed in the buffer. CICS can enter a stress condition if a number of tasks are suddenly dispatchable and require resources.

CPEXpert produces Rule CIC220 if there were any occasions in which the system log journal buffer was full, forcing an I/O operation.

Suggestion: CPEXpert suggests that you increase the buffer size for the system log journal. This is accomplished by increasing the value of the BUFSIZE operand in the DFHJCT macro for the system log (JFILED=SYSTEM in the DFHJCT macro).

The buffer size should be increased until the "buffer full" condition is eliminated for the system log journal. Tasks wishing to write to the system log journal must wait if the system log journal buffer is full, with the potential performance degradation described above.

The value for the BUFSUV operand should not be specified for the system log journal (to allow it to default to the BUFSIZE value) or it should be explicitly specified as the same as the BUFSIZE value. Physical blocks are written from the system log journal based on synchronous output requests (or by filling the buffer, in which a "buffer full" condition is experienced). Consequently, the buffer should be large enough such that no "buffer full" condition occurs.

Reference: *CICS/OS/VS Version 1.7 Performance Guide*: page 81 and pages 274-276.

CICS/MVS Version 2.1.2 Performance Guide: pages 203-205 and page 452.

CICS/ESA Version 3.1.1 Performance Guide: pages 85-87 and pages 268-271.

CICS/ESA Version 3.2.1 Performance Guide: pages 182-184 and pages 304-305.

CICS/ESA Version 3.3.1 Performance Guide: pages 192-194 and pages 323-324.

CICS/ESA Version 4.1.1 Performance Guide: Section 4.6.2 and Appendix A.1.17.

CICS/TS: not applicable

CICS/TS for z/OS: not applicable..

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